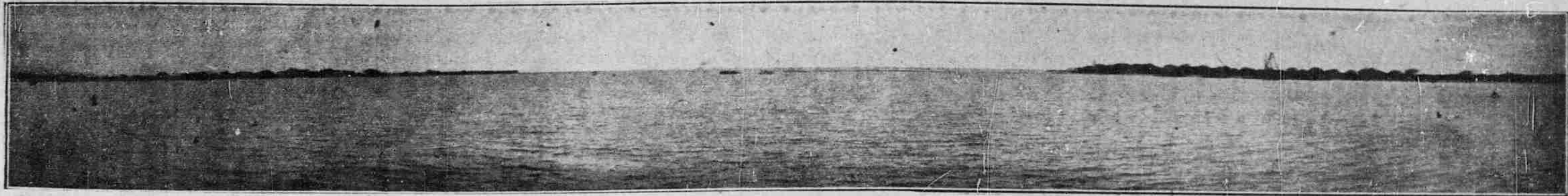


The Planning of the Proposed Naval Site.



THE ENTRANCE TO PEARL HARBOR, (LOOKING SEAWARD. DREDGER AT WORK).

The site for the proposed naval station was acquired on the recommendation of a duly appointed board. It extends over an area of 726 acres, 650 of which are on the mainland on the eastern and seaward shore of the lochs, 50 on a small island and 25 made up of a strip running along the southern shore of another and larger island immediately opposite the mainland property.

This narrow strip, 100 feet wide, took up valuable cane land and was relatively the most expensive portion of the purchase. It is the rule, however, of the government to acquire all bordering rights in such cases and while the naval authorities control the riparian issues, no docks or other private works and interference can prevent the effective work of the naval station.

The equipment of the station as laid out in the present plans renders it a

most useful base for supplies and repairs, while its Mid-Pacific situation, already valuable, is likely to become an imperative necessity not only in time of war but in the piping times of commercial prosperity, always growing, always trending towards the Orient and rebounding therefrom and liable to assume unsuspected proportions upon the opening of the Panama canal.

Captain Ulysses S. G. White, U. S. N. engineer of the local naval station and who acted in his departmental capacity with the boards of survey, furnishes the following data regarding the proposed plans:

AREA.	
East of Railroad.....	112.40 acres
West of Railroad.....	497.05 acres
Between Railroad and low water.....	32.38 acres
Right of Way of Railroad....	6.64 acres
Total Area Main Body....	648.47 acres

Kuahua Island.....	51.64 acres
Strip on South Shore Ford's Island.....	25.83 acres
	725.94 acres

DRY DOCKS.

"The site recommended for the Dry Docks is peculiarly suited for such structures; the trend of the shore line at the site is such as to allow the construction of the two docks as shown, the one 750 ft. long on the east side. The site has been bored to depths of from 72 to 76 ft. and there are no obstacles to the rapid and economical construction. The construction of the two docks at the same time will conserve economy to a very great degree. To the east of the location of the construction and steam engineering shops a wharf and ship can readily be constructed, and probably will be later, at which vessels after coming out of dock can lie, in close proximity to the shops, allowing a continuation of the work by these two de-

partments with a minimum transportation of material used therein.

"The workshops will probably be open steel structures covering large areas with all tools on one floor.

"The storehouses will be closed structures, either brick or concrete, with steel skeleton framing, as nearly fire-proof as such structures can be made.

"The coaling plant will be of the most modern construction fitted for the rapid and economical handling of coal both in receiving and delivering. The storing capacity will probably be about 80,000 tons.

"Quarters and Marine Barracks will be designed especially for the climate and will form the only part of the station where architectural effects will be sought for; in the other buildings utility with conspicuous plainness of detail will be the predominating features.

KUAHUA ISLAND.

"The concentration of the entire Ordnance Department on this island can

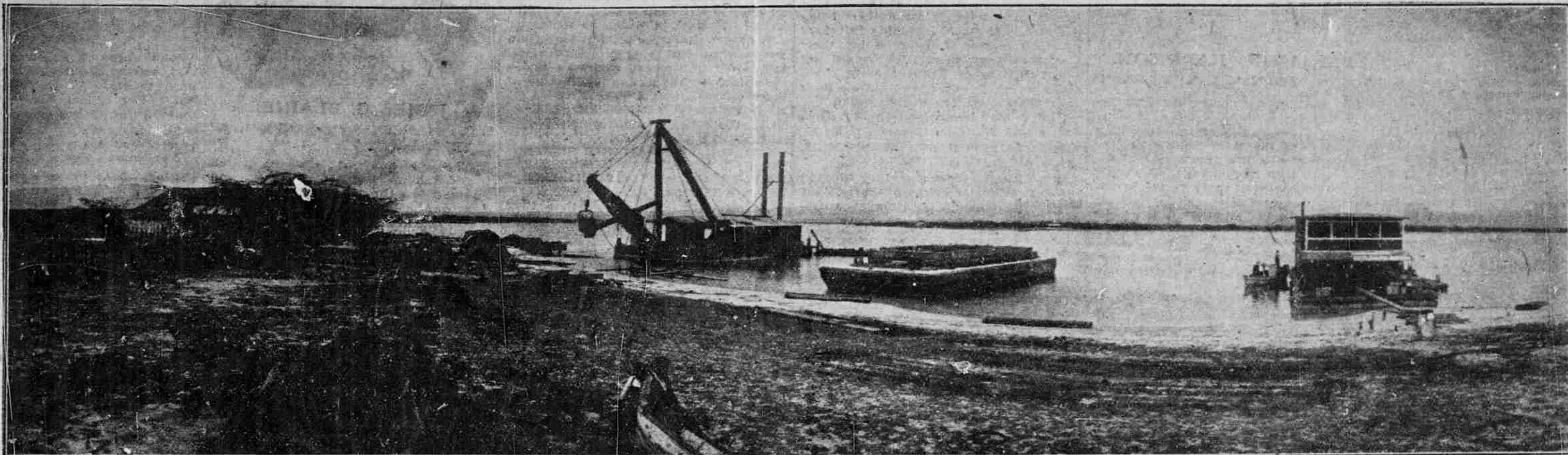
readily be effected and will enable the head of the department to have under his immediate supervision every part thereof.

THE HOSPITAL.

"The Hospital site is the highest land on the reservation being some sixty feet above low water. Being on the crest of an old crater there is nothing between it and the mountains to break the trade winds or contaminate them thus ensuring a continuous supply of fresh pure air, so necessary from a sanitary view point.

"An abundance of good water can be had from artesian wells, any place on the reservation, but slight pumping will be necessary.

"Nature seems to have had the use to which this land was to be put in view when forming it. It is safe to say that no more suitable site for a large and important Naval Station and Base can be found anywhere else on the coast line of the United States."



DREDGER, SAND SCOW AND HOUSE BOAT AT PUULOA.

HOW THE PEARL HARBOR CHANNEL WAS OPENED.

The dredging of Pearl Harbor, completed in August of last year, marks an important step towards the further development of the lochs. The government engineer in charge of the work, Mr. Lawrence Thompson, stated before leaving for the mainland that the work, as completed, made the inner harbor available for vessels drawing nearly thirty feet and not over four hundred feet long, the entrance being without difficulty.

There will be more dredging and cutting off of sharp turns necessary before the harbor will show an easy entrance to the ponderous battleships, and this work, it is thought, soon be entered upon.

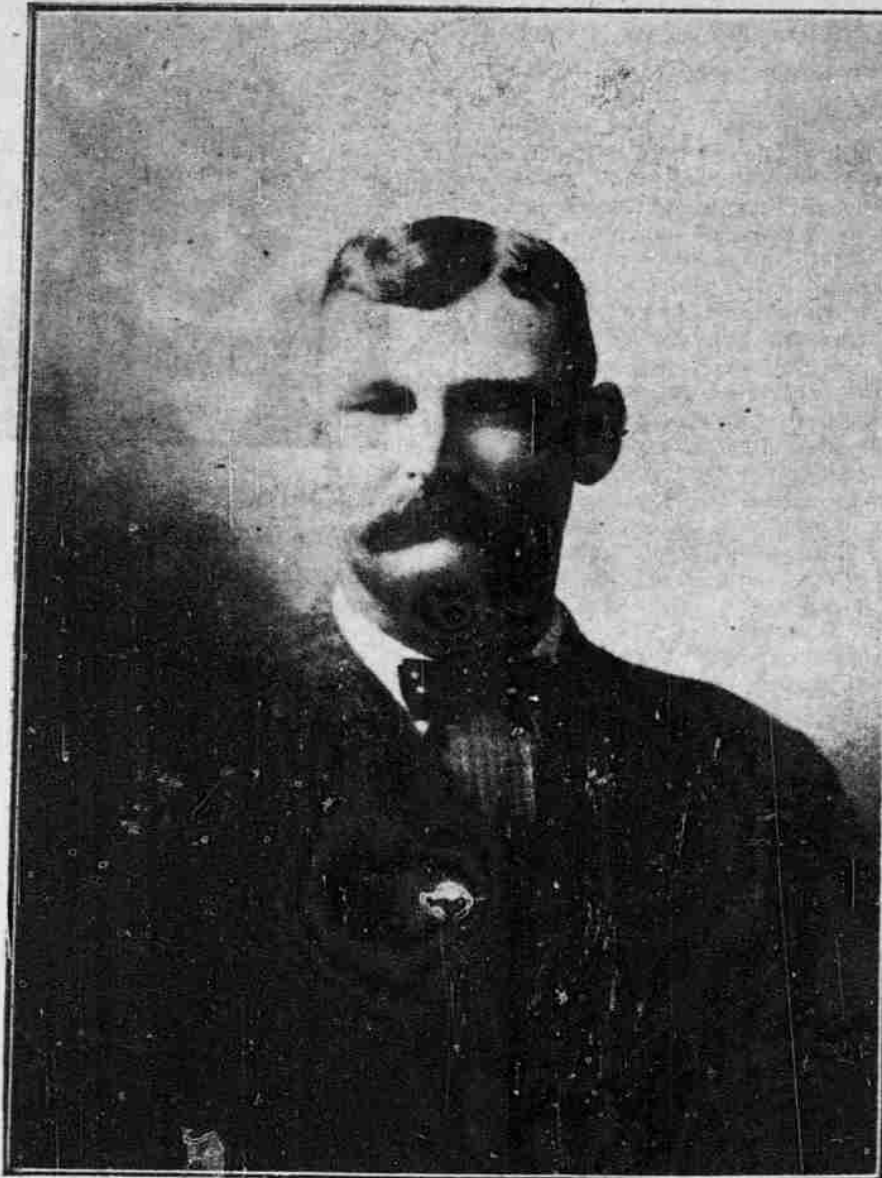
As soon as the purchase of the naval station site was decided upon, the work

of opening the bar was started and a survey of the bar and soundings made by the government engineer. The entire harbor has been carefully charted by the hydrographic engineers of the government, but the additional survey was deemed necessary.

Bids were called for, \$100,000 having been allowed for the work by the government.

Clark & Henry, contractors of Stockton, Cal., placed the lowest bid at \$96,000 to dredge the channel entrance 200 feet wide, 30 feet deep at mean tide, and 1,900 feet long. This last dimension was later increased 100 feet.

Nine months was allowed for the contract, commencing April 1, 1902. The contractors started work with suction dredges, later substituting clam-shell



J. B. AGASSIZ, MANAGER OF COTTON BROS. & COMPANY.

scoops for the suction hose. After five months' work but one-sixteenth of the contract was completed, and the contractors prepared to sublet their contract, convinced that their machinery was unsuitable for the work in hand.

The firm of Cotton Brothers became the sub-lessees, paying Clark & Henry for work actually done and for what machinery they could use. An extension of time was secured from the government, which granted a further nine months for the work beyond the close of the first contract limit. This brought the time allowance to September of last year.

Cotton Brothers, with the help of the dredgers controlled by the Hawaiian Dredging Company, W. F. Dillingham manager, started the work practically afresh, the dredging completed by Clark

& Henry amounting to very little.

The clam-shell scoop was found to be of little avail, and the suction dredges were again placed in commission, being used until the completion of the work.

A house boat was chartered for the accommodation of the men, who thenceforth lived with U. S. Engineer Thompson, who inspected every foot of the work, on the water.

Progress was steadily made, though rough weather and southerly storms often made delays, when the sea broke high over the bar and the big dredger was tossed like a cockleshell. In October, soon after the work was started, a severe "souther" sank one of the dredgers, and work was continued with the one still remaining, running night and day.

On Sunday night, August 2, 1903, the work stopped, the channel was finished

and the contract fulfilled a full month ahead of time. Soundings made since have shown the work to be thorough, no signs of seeping or caving in from the sides of the cut having been found.

Mr. Thompson, before returning to the States to turn over his report, with plans and surveys, to Colonel Huer at San Francisco, head of the department, who has since issued a certificate to the original contractors accepting the work, spoke as follows regarding the cutting of the channel:

"The cutting of the bar at Pearl Harbor was an unusually difficult piece of contract work, and to Cotton Brothers only is due the success for doing the dredging, and I might add that one particular man, namely, Mr. James Agassiz, is almost entitled to the individual credit for bringing to a successful completion a difficult piece of engineering work."



W. F. DILLINGHAM, MANAGER HAWAIIAN DREDGING CO.



CAPTAIN PARKER, IN COMMAND OF DREDGER WORKS AT PEARL HARBOR.